



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/559,903

04/26/2000

Zhiping Yin

MI22-1427

1798

21567

7590

11/17/2004

WELLS ST. JOHN P.S.
601 W. FIRST AVENUE, SUITE 1300
SPOKANE, WA 99201

EXAMINER

ECKERT II, GEORGE C

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 11/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/559,903	Applicant(s) YIN ET AL.	
	Examiner George C. Eckert II	Art Unit 2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 27,33 and 36-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 27,33 and 36-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 April 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>8/31/04</u> . | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

1. Applicant's amendment dated August 31, 2004 in which claim 39 was amended has been entered. Claims 27, 33 and 36-43 are pending.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 39-43 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

Claim 39 cites that the antireflective material comprises carbon. However, applicant's specification does not teach such a layer as part of the invention. Specifically, applicant's antireflective layer 50 is taught in the specification to comprise Si, N, O and H but is not made to contain C nor is it taught as being made by a process that uses a C based precursor. As such, there is no support for the limitation of claim 39 that the antireflective layer comprises carbon.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 27, 33 and 36-43 (39-43 insofar as supported) are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,133,613 to Yao et al. (of record) in view of applicant's admitted prior art as taught in instant figures 1-3.

Yao et al teach in figure 5 the structure of instant claims 27 and 39. Specifically, Yao et al. teach a polysilicon layer 504 over a semi-conductive substrate 502; a metal silicide 506 on the polysilicon layer; an antireflective layer 508 comprised of SiN_xO_y over and in physical contact with the metal silicide; and a layer of silicon nitride 510 on the antireflective layer. Yao et al. also teach that a photoresist layer 516a is formed on the layers such that the layers may be etched to form a stack (col. 4, lines 37-43).

Yao et al. do not teach that the polysilicon layer is formed on a gate oxide layer, a specific stoichiometry of the antireflective layer, or that the antireflective layer is formed with carbon. However, these elements are made obvious by applicant's admitted prior art. Regarding the gate oxide layer, applicant teaches in figure 3 a gate oxide layer 16 formed underlying the polysilicon layer. Moreover, such a gate oxide layer is well known in the art and considered obvious for inclusion in the teaching of Yao et al. The purpose of the Yao et al. device is to provide better controlled line dimensions during photolithography so that doped regions formed in an underlying substrate using the lines as masks are likewise better controlled. It is well known that a MOSFET gate stack, which has an underlying oxide layer, is commonly used as a mask when doping the source/drain regions in a substrate. As such, it is considered obvious to include an oxide layer in the stack of Yao et al.

Regarding the composition of the antireflective layer, applicant teaches that such claimed compositions were known. Specifically, applicant teaches on page 3, lines 12-20 that an

Art Unit: 2815

antireflective layer 26 may comprise an organic layer or may comprise $\text{Si}_x\text{O}_y\text{N}_z\text{H}$ in the ratios as instantly claimed. Yao et al. teach that the composition of antireflective layer 506 is determined by the required optical properties of the antireflective layer (col. 2, lines 10-16, col. 4, lines 24-36). It is considered obvious to use the ratios taught by applicant's prior art in the device of Yao et al. as such ratios are merely optimizations of ranges known in the art.

Finally, the limitation in claim 27 that the silicide is annealed after formation of the antireflective layer is merely a product by process limitation. Note that a "product by process" claim is directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ 324; In re Avery, 186 USPQ 161; In re Marosi et al., 218 USPQ 289; and particularly In re Thorpe, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Applicant has the burden of proof in such cases, as the above case law makes clear. In the instant claims, the processing limitation does not structurally distinguish over that taught by Yao et al. The final product made obvious by Yao et al. and applicant's prior art as well as the final product instantly claimed, both contain an antireflective layer over, and in direct contact with, a silicide layer. The process of the instant claims has not been shown to provide a structure which is materially different from that made obvious by Yao et al. in view of applicant's prior art.

Art Unit: 2815

Response to Arguments


4. Applicant's arguments with respect to claims 39-43 have been considered but are moot in view of the new ground of rejection. The above rejections and consequent withdrawal of the allowance of claims 27, 33 and 36-38 are newly made after reconsideration of Yao et al and applicant's prior art.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to George C. Eckert II whose telephone number is (571) 272-1728.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


GEORGE ECKERT
PRIMARY EXAMINER